

# CONTINUED IMPLEMENTATION OF BEST MANAGEMENT PRACTICES TO REDUCE AGRICULTURE NONPOINT SOURCE POLLUTION IN SUPPORT OF THE ARROYO COLORADO WATERSHED PROTECTION PLAN

FINAL REPORT  
TSSWCB PROJECT #17-06



FUNDING PROVIDED THROUGH A CLEAN WATER ACT §319(h) NONPOINT  
SOURCE GRANT FROM THE TSSWCB AND THE U.S. ENVIRONMENTAL  
PROTECTION AGENCY

## **EXECUTIVE SUMMARY**

The Texas State Soil and Water Conservation Board (TSSWCB) Harlingen Regional Office (HRO) working cooperatively with the Southmost, Hidalgo, and Willacy Soil and Water Conservation Districts (SWCDs) and the United States Department of Agriculture - Natural Resources Conservation Service (NRCS), provided technical and financial assistance to agricultural producers in the Arroyo Colorado watershed through a Clean Water Act §319(h) nonpoint source grant from the U.S. Environmental Protection Agency.

The development and implementation of water quality management plans (WQMPs) in the Arroyo Colorado watershed continues to be a success. A conservation planner stationed in the TSSWCB HRO works cooperatively with local SWCDs and NRCS to provide agricultural producers with the opportunity to voluntarily implement best management practices (BMPs) that would have a positive impact on water quality in the Arroyo Colorado.

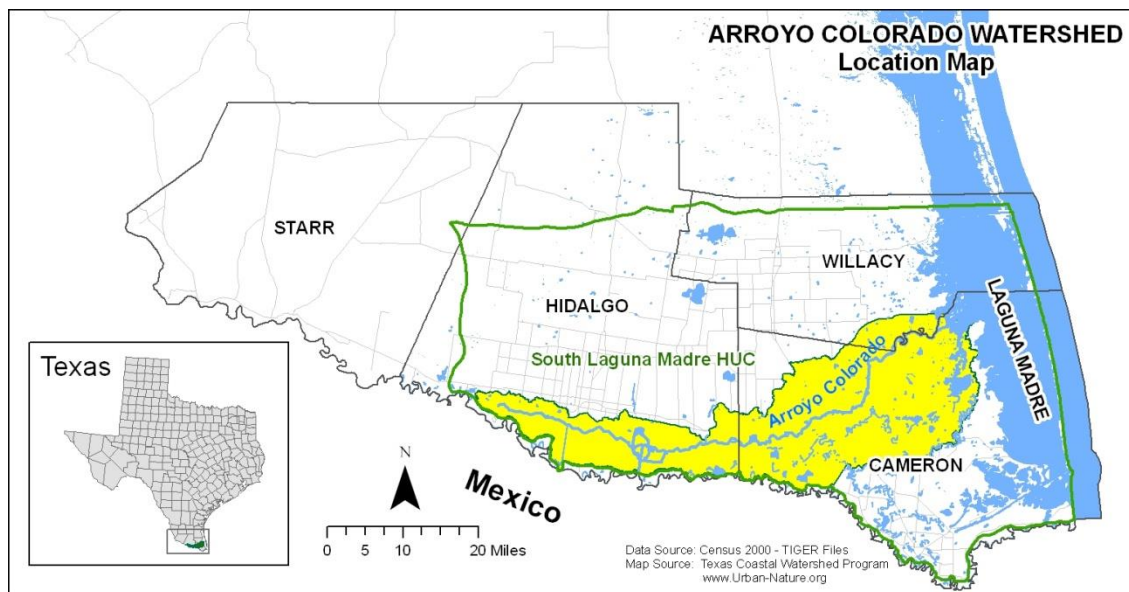
Through this project, a total of 33 WQMPs were developed and implemented on approximately 1,185 acres. A majority of the practices installed were related to the installation and management of irrigation. The conservation planner worked with the SWCDs and local producers to educate them on the WQMP program, BMPs, proper soil sampling, and water quality. The Conservation planner also presented at educational events, agricultural field days, and was present at all Arroyo Colorado Watershed Protection Plan (WPP) stakeholder meetings.

Implementation of WQMPs has and will continue to be a key component in the overall effort to reduce nonpoint source (NPS) loading and improve water quality in the Arroyo Colorado watershed.

# INTRODUCTION

The Arroyo Colorado Watershed is located in the Lower Rio Grande Valley of South Texas and flows through Hidalgo and Cameron counties. The lower 16 miles of the Arroyo Colorado is the boundary between Cameron and Willacy counties. The Arroyo Colorado drainage area is a subwatershed of the Nueces-Rio Grande Coastal Basin, also known as the Lower Laguna Madre Watershed. The streams of the Nueces-Rio Grande Coastal Basin, including the Arroyo Colorado, drain to the Laguna Madre, which is considered to be one of the most productive hypersaline lagoon systems in the world.

The Lower Rio Grande Valley comprises the northern part of the Rio Grande Delta, a broad fluvio-deltaic plain laid down over tens of thousands of years by the ancestral Rio Grande. Just as the Rio Grande is the major source of freshwater for the Lower Rio Grande Valley, the Arroyo Colorado serves as the main drainage stream for this area of Texas.



The Arroyo Colorado currently has low dissolved oxygen levels within the tidal segment, not meeting the aquatic life use designated by the State of Texas and described in the Water Quality Standards. This has been the case for every 303(d) list prepared by the state since 1996. In addition, the Arroyo became impaired due to high bacteria levels in 2006.

To address the Arroyo Colorado's bacteria and dissolved oxygen impairment as well as nutrient concerns, the Arroyo Colorado Watershed Partnership developed *A Watershed Protection Plan for the Arroyo Colorado – Phase I*. Since the publication of the watershed protection plan in January 2007, the Partnership has been working on implementation of management measures to improve water quality and natural habitat in the Arroyo Colorado. The objective of components of the Arroyo Colorado WPP addressing agricultural nonpoint source pollution is to encourage the voluntary adoption of best management practices to reduce suspended sediment levels resulting from cropland erosion, BOD from runoff of crop residue, and nitrogen and phosphorus fertilizer

runoff from irrigated cropland fields. The WPP concludes that approximately 300,000 acres of irrigated cropland lies within the Arroyo Colorado watershed.

The TSSWCB has continued its efforts to provide local landowners with technical and financial assistance for the development and implementation of WQMPs in the watershed. A WQMP is a site-specific plan developed through and approved by SWCDs, which includes appropriate land treatment practices, production practices, management measures, and technologies that prevent and abate agricultural and silvicultural nonpoint source pollution. The BMPs prescribed in a WQMP are defined in the NRCS Field Office Technical Guide. TSSWCB and NRCS have various financial incentive programs to assist producers in implementing a WQMP.

Expanding participation of agricultural producers in WPP implementation is essential to achieve water quality improvement. The TSSWCB HRO and local SWCDs are uniquely situated to engage and support agricultural producers in watershed restoration and protection efforts, including implementation of appropriate BMPs to address nonpoint source pollution as identified in the Arroyo Colorado WPP.

## **PROGRAM DEVELOPMENT**

TSSWCB administered federal CWA §319(h) funds through the HRO to provide technical assistance to agricultural producers to develop and implement WQMPs in the Arroyo Colorado watershed. The Conservation planner developed plans and assisted producers in acquiring financial incentives for the implementation of BMPs. This project improved and enhanced the abilities of HRO, in coordination with the local SWCDs, to assist area landowners in preventing and abating agricultural nonpoint source pollution.

The Conservation planner promoted WQMP development and availability of financial incentives and encouraged participation from agricultural producers. They also worked with NRCS and the Texas Water Resources Institute to educate producers about water quality issues and how WQMPs and BMPs address pollutant loadings from agriculture. The Conservation planner worked with commodity organizations, such as Texas Citrus Mutual, Rio Grande Valley Sugar Growers, Texas Vegetable Association, and Texas Farm Bureau, to educate their members on this opportunity to enhance the value of their operation and achieve water quality goals for the watershed at the same time. Additionally, they worked with the Irrigation Districts to educate their customers on this effort. The HRO and Conservation planner cooperated and communicated with the Arroyo Colorado Watershed Partnership in order to achieve project goals efficiently and effectively and to summarize activities and achievements made throughout the course of this project.

The Conservation planners, with assistance from NRCS, assisted landowners in the development of WQMPs. WQMPs are developed according to the NRCS Field Office Technical Guide. By statute, WQMPs are developed so that their implementation achieves a level of pollution prevention or abatement that is consistent with State water quality standards. Once the WQMP was developed, it underwent technical review and certification. Upon certification of the WQMP, the Conservation planner worked with the landowner to implement the BMPs prescribed in the WQMP.

The Conservation planner, with assistance from NRCS, assisted 33 landowners in applying for and obtaining financial incentives to aid in implementation of BMPs prescribed in WQMPs. The conservation planner conducted status reviews annually on all WQMPs developed and certified through the course of this project and on existing WQMPs in the watershed to ensure that the landowners implement BMPs as specified and agreed to in the WQMP implementation schedule. The conservation planner also tracked utilization of obligated financial incentives and assisted landowners in utilizing obligated funds on schedule.

The Conservation planner worked with landowners to implement BMPs prescribed in the WQMP. The major BMPs installed included:

#### Irrigation Land Leveling (464)

- This practice is for the reshaping of land to be irrigated to planned grade. Land to be leveled shall be suitable for irrigation and for the proposed methods of water application. Water supplies and irrigation deliveries to the area to be leveled shall be sufficient to make irrigation practical for the crops to be grown and the irrigation water application method to be used.



#### Irrigation Pipeline (430)

- Irrigation pipelines are installed to replace open ditches, increase irrigation efficiency and protect water quality.



#### Nutrient Management (590)

- Managing the amount, source, placement, form, and timing of the application of plant nutrients and soil amendments.
- Soil sampling occurred on an annual basis on WQMPs that included nutrient management.

Other BMPs installed were surface roughening (609), conservation crop rotation (328), pest management (595), irrigation water management (449), and irrigation system, surface and subsurface (443), forage and biomass planting (512), forage harvest management (511), prescribed grazing (528), and subsurface drains (606).

## CONCLUSIONS

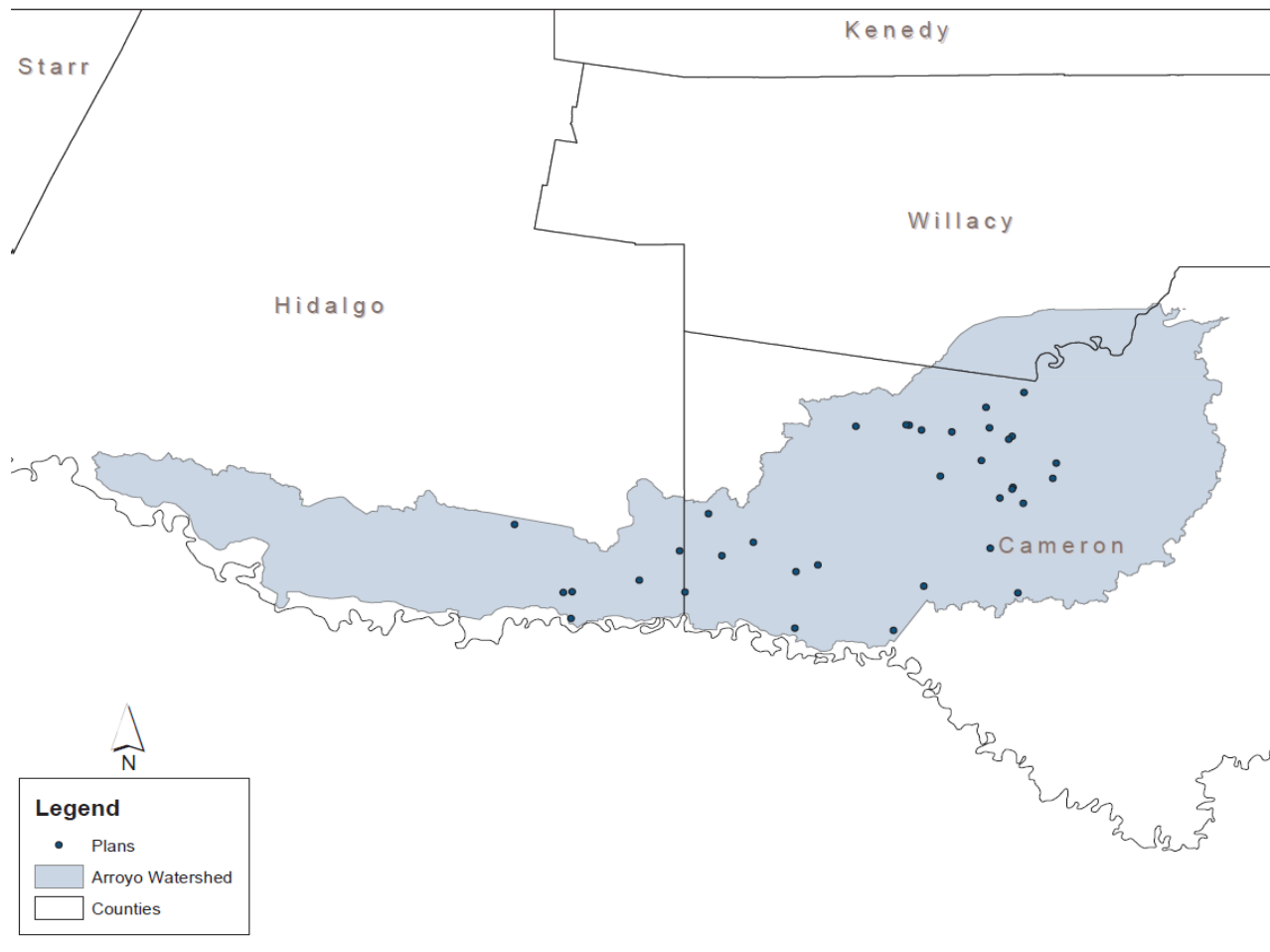
The development and implementation of WQMPs in the Arroyo Colorado watershed continues to be a success. The TSSWCB Harlingen Regional Office, local SWCDs and NRCS provided agricultural producers with the opportunity to voluntarily implement BMPs that have a positive impact on the water quality of the Arroyo Colorado.

Through this project, a total of 33 WQMPs were developed and implemented on approximately 1,185 acres. A majority of the practices installed were related to the installation and management of irrigation. Below is a map showing the WQMPs developed and implemented in the watershed.

There is still a need to address agricultural NPS issues in the Arroyo Colorado watershed and to continue efforts in providing local landowners with technical and financial assistance. Through these efforts, there will be a continued reduction in NPS loading to improve water quality in the Arroyo Colorado.

TSSWCB has partnered with the local SWCDs to continue this effort for another three years. The new project will continue utilizing CWA Section 319(h) grant funding to help landowners implement BMPs in the watershed.

## Water Quality Management Plans Developed and Implemented in the Arroyo Colorado Watershed



\*some WQMPs are hidden behind other dots because of scale